SOV/137-59-2-4763

Color Reactions for Distinguishing Lanthanum From Cerium

Determination of 3 - 25 γ /cc Ce^{3+} is achieved with $\leq$ 10% error. A. M

Card 2/2

SOV/137-59-2-4854

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 2, p 355 (USSR)

AUTHORS: Korenman, I. M., Frum, F. S., Ryzhkova, L. V.

TITLE: Derivatives of Chromotropic Acid as Reagents for Titanium (Proizvodnyye khromotropovoy kisloty kak reaktivy na titan)

PERIODICAL: Uch. zap. Gor'kovsk. un-ta, 1958, Nr 32, pp 113-117

ABSTRACT: Bibliographic entry

Card 1/1

USCOMM-DC-60,889

L 40567-65 EWT(m)/EWP(t)/EWP(b) IJP(c) JD

ACCESSION NR: AR5009904 UR/0081/65/000/004/G024/G024

SOURCE: Ref. zh. Khimiya, Abs. 4G153

AUTHOR: Frum, F. S.; Kotel'nikova, G. I.

TITLE: Determination of iodide trace impurities in sulfur

CITED SOURCE: Sb. Peredovyye metody khim. tekhnol. i kontrolya proiz-va, Rostov-na-Donu, Rostovsk. un-t, 1964, 333-335

TOPIC TAGS: trace analysis, sulfur, iodine, impurity content, photometry

TRANSLATION: A method is proposed for detecting trace quantities ($\geq 1 \cdot 10^{-8}\%$) of I^- in sulfur. The method is based on the catalytic effect of iodine on the oxidation reaction of AsO_3^{3-} by $Ce(4+)$. Cl^- and Br^- do not interfere with the determination of I^-. Comparatively large quantities of Os, Hg and Ag also catalyze this oxidation reaction, but these elements are seldom associated with iodine in sulfur. The sensitivity of the method is 10^{-5} γ/mℓ of I. A sample consisting of 1-2 grams of finely pulverized sulfur is strongly agitated for 1-2 hours in 20 mℓ of doubly dis-

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ACCESSION NR: AR5009904

tilled water and centrifuged., Then 0.6 mℓ of a 0.1 normal solution of $Ce(SO_4)_2$ in a 3.5 normal solution of H_2SO_4 and 0.6 mℓ of a 0.2 normal solution of Na_3AsO_3 are added to 5 mℓ of the centrifuged sulfur which is then held in a 30° water bath for 5 minutes. The solution is photometrically measured with a blue light filter with respect to a $Ce(SO_4)_2$ solution of the same concentration (a solution containing 0.15 mℓ of a 0.1 normal solution of $K_2Cr_2O_7$ and 5.5 mℓ of water may be used as the comparison solution). The I^- content is found from the reduction in the intensity of the Ce(4+) color, using a calibration chart. The relative error in determination is 20-30%. B. Manole.

SUB CODE: GC, OP ENCL: 00

Card 2/2

RUMANIA

TIMARIU, S., Dr, TASCENCO, Vl., Chemist, FRUM, M., Eng, and CALOTOIU, E., Eng of the Dobrogea Experimental Station (Statiunea Experimentala Dobrogea).

"Preliminary Investigations on the Value of Black Sea Algae and Their Use in the Feeding of Animals and Birds."

Bucharest, Revista de Zootehnie si Medicina Veterinara, Vol 13, No 10, Oct 63, pp 23-29.

Abstract [Authors' English summary modified]: The algae Phylophora Brodiaei, widely available in the Black Sea coastal waters, may be preserved in the form of flour, or pickled as a mixture of 65% ground algae, 35% rolled corn and 2.5% molasses solution (7 liters per 100 kilograms of algae). In this case the protein contents of the mixture is similar to that of peas, except that the algae contain fewer non-nitrogenous extraction substances (28.6%) and more mineral salts (38.69%). The nutritive value of algae flour is 0.320 Nutritive Units and 85 g A.D. [unidentified] while that of the mixture with corn and molasses is 0.365 Nutritive Units and 19 g A.D.

Includes 2 tables and 3 references, of which 1 Western and 2 Russian.

1/1

FRUMAR, M.

On the luminescence of cadmium iodide activated with lead (II) iodide. Coll Cz Chem 29 no. 3:672-679 Mr '64.

1. Institute of General and Inorganic Chemsitry, Higher School of Chemical Technology, Pardubice.

ORLENKO, Yu.M., doktor med. nauk (Khar'kov, ul. Petrovskogo, d.6/8, kv.15);
FRUMAN, Yu.Ya.

Acute cholecystitis in aged and senile persons. Vest. khir. 89 no.10: 125-127 O '62. (MIRA 17:10)

1. Iz kliniki obshchey khirurgii (zav. - doktor med. nauk Yu.M. Orlenko) lechebnogo fakul'teta Khar'kovskogo meditsinskogo instituta (rektor - dotsent B.A. Zadorozhnyy) na baze 11-y Khar'kovskoy gorodskoy klinicheskoy bol'nitsy (glavnyy vrach - Ye.D. Guzhel).

FRUM-KETKOV, R. L. Cand Phys-Math Sci -- (diss) "On the behavior of cycles during ~~uninterrupted~~ continuous reflections of compacts and multiforms." Mos, 1957. 8 pp (Mos State Univ im M. V. Lomonosov. Mechanical-Math Faculty), 100 copies (KL, 44-57, 99)

FRUM-KETOV, R.L.

20-2-14/62

AUTHOR: Frum-Ketov, R.L.

TITLE: On the Behavior of Cycles in Continuous Mapping of Compacts (O povedenii tsiklov pri nepreryvnykh otobrazheniyakh kompaktov)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 115, Nr 2, pp. 249 - 252 (USSR)

ABSTRACT: M^n and M_1^n be two n-dimensional closed orientable manifolds. When f is a continuous representation of M^n on M_1^n with the degree zero, the n-dimensional main cycle of the manifold M^n is represented on zero. This applies especially to the representation of M^n on the n-dimensional Euclidean space. P.S. Aleksandrov posed the following problem: It may be proved that in the case of any $k(0 \leqslant k \leqslant n-1)$ in M^n an essential k-dimensional cycle z^k exists which represents itself on zero. The present paper gives a positive answer to this problem in a more general formulation. The group of rational numbers is here chosen as group of the coefficients. First the conceptions "essential cycle" and "essential carrier" are defined. The author shows the following: The k-dimensional essential cycle z^k is represented with the aid of f on zero, when a certain es-

Card 1/2

20-2-14/62

On the Behavior of Cycles in Continuous Mapping of Compacts

sential carrier Φ of the cycle z^k is represented as follows: either onto a set that does not contain any k-dimensional cycles different from zero or onto the k-dimensional oriented manifold M^k. In this connection applies $f(z^k) \sim 0$ in M^k.

The author gives three comprehensive theorems and partially also their proofs. There is 1 Slavic reference.

ASSOCIATION: Moscow State University imeni M.V. Lomonosov (Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova)

PRESENTED: February 13, 1957, by P.S. Aleksandrov, Academician

SUBMITTED: February 13, 1957

AVAILABLE: Library of Congress

Card 2/2

AUTHOR: FRUM-KETKOV, R.L. 20-118-1-11/58

TITLE: On the Behavior of the Cycles Which are not Homologous to Zero Under Mapping of an n-Dimensional Manifold Into an n-Dimensional Euclidean Space (O povedenii tsiklov, ne gomologichnykh nulyu, pri otobrazhenii n - mernogo mnogoobraziya v n-mernoe yevklidovo prostranstvo)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol 118, Nr 1, pp 42-44 (USSR)

ABSTRACT: Let M^n (M_1^n) be an n-dimensional closed orientable manifold; R^n the n-dimensional Euclidean space; $\Delta^s(k)$ the s-dimensional Betti group of the complex K; $p^s(K)$ the rank of $\Delta^s(K)$; f a continuous mapping of M^n into R^n or into M_1^n; ξ^s an s-dimensional homology class of M^n different from zero. The statement "there exist cycles in this homology class which are mapped by f into zero" is assumed to mean that in R^n (in M_1^n) there exists a polyhedron L with the dimension $\leqslant s$ so that for each $\varepsilon > 0$ the set $f^{-1}\overline{(O(L,\varepsilon))}$ is the carrier of a cycle of ξ^s and the image of this cycle in $\overline{O(L,\varepsilon)}$ is homologous to zero. Let r_f^s denote the maxi-

Card 1/3

mum number of independent s-dimensional homology classes with cycles which are mapped by f into zero. Let q_f^s be the rank of the subgroup $\Delta^s(f(M^n))$, onto which $\Delta^s(M^n)$ is mapped.

Theorem : Let f be a continuous mapping of M^n into R^n or into M_1^n of degree zero and let $p^s(M^n) \neq 0$. Then it is

$$q_f^s + q_f^{n-s} \leqslant \frac{p^s(M^n) + p^{n-s}(M^n)}{2}$$

$$q_f^s \leqslant r_f^{n-s} \quad , \quad q_f^{n-s} \leqslant r_f^s$$

Let f be a continuous mapping of M^n into the polyhedron K. Let μ_f^s be the maximum number of such independent elements of the group $\Delta^s(M^n)$ that there exist carriers of cycles of this homology classes which are mapped by f onto polyhedra which contain no s-dimensional cycles different from zero. Let $\bar{\mu}_f^s$ be the maximum number of the elements of $\Delta^s(M^n)$ for

On the Behavior of the Cycles Which are not Homologous to Zero Under Mapping of an n-Dimensional Manifold Into an n-Dimensional Euclidean Space 20-118-1-11/58

which there are cycle carriers for every $\varepsilon > 0$, the mappings of which pass over into a polyhedron by an ε-displacement.

Theorem: Let f be a continuous mapping of M^n into R^n or into M_1^n and $p^s(M^n) \neq 0$. Then it is

$$\mu_f^s + \bar{\mu}_f^{n-s} \geqslant p^s(M^n) .$$

2 Soviet and 1 foreign references are quoted.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova (Moscow State University imeni M.V. Lomonosov)

PRESENTED: June 27, 1957, by P.S. Aleksandrov, Academician

SUBMITTED: June 26, 1957

AVAILABLE: Library of Congress

Card 3/3

AUTHOR: Frum-Ketkov, R.L. SOV/20-122-3 7/57

TITLE: Homological Properties of the Inverse Images of Points for Mappings of Manifolds Increasing the Dimension (Gomologicheskiye svoystva proobrazov tochek pri otobrazheniyakh mnogoobraziy povyshayushchikh razmernost')

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 3, pp 349-351 (USSR)

ABSTRACT: Let M^n denote a closed, orientable n-dimensional manifold. $p^s(M^n)$ the rank of the s-dimensional homology group of M^n. The rational number field or the residual group mod m is assumed to serve as coefficient group.
Theorem: Let f be a continuous mapping of the M^n onto the m-dimensional polyhedron K, $m > n$; the inverse images of all points from K are assumed to be acyclic in all dimensions $\leq s$. Then it is $2s < n-2$.
Theorem: Let f be monotonic, i.e. the inverse image of a connected set is assumed to be connected; let f map M^3 onto M^m $m > 3$. In M^m there do not exist more than $p'(M^3)$ two-dimensional polyhedra so that each of them is essential carrier of a two-dimensional cycle and that for every point y of these polyhedra it holds:

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Homological Properties of the Inverse Images of Points for Mappings of Manifolds Increasing the Dimension SOV/20-122-3 7/5

$H_1(f^{-1}(y)) = 0$. Furthermore the paper contains some introducing considerations on the results of Vietoris [Ref 1], Begle [Ref 2,3], Dyer [Ref 4] and Keldysh [Ref 5] and a further closely related theorem.

There are 5 references, 1 of which is Soviet, 1 German, and 3 are American.

PRESENTED: May 12, 1958, by P.S. Aleksandrov, Academician

SUBMITTED: April 29, 1958

Card 2/2

FRI[illegible].L.

[illegible]tric diameter of function spaces. Usp. mat. nauk 20 n 4 176-18[illegible] Jl-Ag '65.

Some properties of function spaces of finite smoothness. Ibid.:181-186 (MIRA 18:8)

L 29100-66 EWT(d) IJP(c)

ACC NR: AP6019388 SOURCE CODE: UR/0042/65/020/004/0181/0186

AUTHOR: Frum-Ketkov, R. L.

ORG: none

18
B

TITLE: Properties of spaces of functions of finite smoothness

SOURCE: Uspekhi matematicheskikh nauk, v. 20, no. 4, 1965, 181-186

TOPIC TAGS: Lipschitz condition, polynomial Lagrange equation

ABSTRACT: The present article follows immediately upon another article by the author appearing in the same issue of the periodical. This article shows that some metric characteristics considered in the first article for spaces of functions of finite smoothness differ no more than K times from the radius of the maximum n-dimensional sphere contained in a space in which K does not depend on n: i.e., these quantities are weakly equivalent. The upper limit for n is evaluated. For a class of functions which are defined on a segment and whose derivative of order p satisfies the Lipschitz condition with a fixed constant, the author evaluates the accuracy of the following method of defining functions of this class by means of n real parameters: The determining segment is divided into n — 1 equal parts and the values of a function are taken at the points of division. The value of

Card 1/2 UDC: 517.5

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ACC NR: AP6019388

0

a function at an arbitrary point is determined according to the corresponding localizable Lagrange interpolation polynomial of degree $p + 1$. It is found that any other method of defining functions of this class by means of n real parameters provides an accuracy no better than K_1-fold, as compared with the above-indicated method, where K_1 is a constant not dependent on n. This is also true for the corresponding class of functions defined on an s-dimensional cube, $s \geq 2$. For the simplest classes $s = 1$, $p \leq 1$, where accurate evaluation can easily be made, the aforementioned method is found to be the most accurate method of defining functions by means of n real parameters. Orig. art. has: 9 formulas. [JPRS]

SUB CODE: 12 / SUBM DATE: 20Jul63 / ORIG REF: 004

Card 2/2

FRUMAN, K.I., inzh.

Dynamics of a tractor-drawn trenching unit with active working elements. Stroi. i dor. mash. 10 no.3:20-22 Mr '65. (MIRA 18:5)

LOBANCHENKO, N.G., inzh.; GUSEYNOV, M.Kh., inzh.; FRUMEN, B.V., inzh.

Experience in constructing and operating an open electric power plant. Elek.sta. 32 no.8:14-19 Ag '61. (MIRA 14:10)
(Electric power plants)

FRUMEN, L.N.

Treatment of alkaline oil-refining sludge. E. A. Eminov and L. N. Frumen. Russ. 51,920, Nov. 30, 1937. Alkali petroleum sludge is treated with a soln. of NaOH of at least 18°Bé., settled, the oil removed, the alkali soln. again treated with at least 16°Be. NaOH, and settled, and the sepd. naphthenic soaps are treated with kerosene alkali sludge for total sepn. of the oil. The soaps are then sepd. in the usual manner.

A.V.S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

FRUMEN, L.N.
CA

22

Demulsifier for petroleum emulsions from petroleum acid sludge. L. N. Frumen. *Azerbaidzhanskoe Neftyanoe Khoz.* 26, No. 7, 27-8(1947).—The bulk of H_2SO_4 is removed by washing the acid sludge with H_2O and steam. The sludge is then dissolved in kerosene or similar fraction, and is kept in acid-proof settling tanks to settle out the remaining 1-2% H_2SO_4. The sepd. out kerosene-dissolved sludge is transferred into vats where it is neutralized with a 10% lime soln. at 80-90° with methyl orange as an indicator. Depending on the origin of the sludge, the neutralized product (demulsifier) has the following characteristics: d_4^{20} 0.920-0.930, Engler viscosity (50) 10-20, H_2O content (Dean and Stark method) up to 3%, reaction to methyl orange neutral, and freezing p. 12-20°. For use and primarily for ease of transportation this product is dild. with 20-30% of kerosene. Demulsification of oil from various wells at 50-60° with 1-3% of the demulsifier caused the sepg. out of almost all of the H_2O in 1-3 hrs.

M. Hosch

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

FRUMEN, L.N.

FRUMEN, L.N.

Controlling alkali exhaustion in alkali purification of petroleum products. Azerb.neft.khoz. 36 no.8:34-36 Ag '57. (MIRA 10:11)
(Petroleum products) (Alkalies)

26521
S/065/61/000/008/005/009
E030/E135

11.0140

AUTHORS: Ismailov, R.G., and Frumen, L.N.

TITLE: Inhibiting the formation of emulsions in the alkali washing of petroleum products with the aid of electrolytes

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1961, No.8, pp. 28-31

TEXT: This work was carried out under the auspices of the Azerbaydzhan Sovnarkhoz (Baku refinery). Use is suggested as prophylactic agents, of electrolytes whose surface-active groups have signs equal and opposite to those of the alkali. Thus, in a hydrophilic system use polyvalent cations, and in a hydrophobic system use anions. The effectiveness of the method should increase strongly with valency. Care must be taken to avoid excess addition, otherwise emulsions of the opposite type may form. For laboratory tests, light diesel fuels were given alkaline wash with an insignificant amount of free alkali (0.2%) in the form of Na_2CO_3 and $NaHCO_3$; electrolytes added were sea water, cooking salt, sodium sulphate and magnesium sulphate.

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26521

Inhibiting the formation of S/065/61/000/008/005/009
E030/E135

The distillate and reagents were mixed for 1-2 minutes at 60-70 °C and then maintained at that temperature. The time taken for removal of alkali was taken as index of the electrolyte's effectiveness (see Table 1). $MgSO_4$ (sea-water) is seen to be best, perhaps because of the divalent ion, or a synergistic effect due to the other ionic impurities in it. Hard well water, and extract from cationic filters from boiler units (containing Na^+, Mg^{++} and Ca^{++}) are equally effective. Results have been verified on a full-scale continuous unit at 75-85 °C using 3-4% solution of NaOH in two or three stages, depending on the acidity of the fuel. There are 2 tables.

ASSOCIATION: Sovnarkhoz Az. SSR, Bak. NPZ

Card 2/ 3

ISMAILOV, R.G.; FRUMEN, L.N.

Preventing emulsion formation in the alkali refining of petroleum products by means of electrolytes. Khim.i tekh.topl.i masel 6 no.8:28-31 Ag '61. (MIRA 14:8)

1. Sovnarkhoz Azerbaydzhanskoy SSR i Bakinskiy neftepererabatyvayushchiy zavod.
(Diesel fuels)

CA FRUMER, L.A.

9

Effect of alloying elements on the properties of low-carbon steel. V. A. Delle and L. A. Frumer. *Stal* 8, 619-25(1948).—The effect of Si, Mn, Cr, Ni, Mo, Cu, and Ti, severally and combined, was studied on the mech. properties of annealed or normalized low-C steel. The annealing was carried out at 4(0 + 10 + 70° followed by temper at 670-80° for 2 or 10 hrs. and air cooling. The predominant microstructure of the unalloyed and singly alloyed specimens was ferrite with a small quantity of pearlite, and of the multi-alloyed it was ferrite with some sorbite. The graining of all specimens was fine. Reserve elasticity (*C.A.* 35, 2812[1]), tensile strength, and impact strength were detd. on the specimens. The results of 30-40 detns. of reserve elasticity were used to construct diagrams of transition to brittleness temps. All of the alloying elements increased the elasticity and the tensile strength. Si, Mn, and Mo were most effective. Ni and Cr had little effect. Of the elements only Cr improved the impact strength. Ni, Cu in any amt., and Mn up to 1% lowered the temp. at which the steel becomes brittle. Si, Cr, and Mn above 1% raised the transition temp. M. Hosch

FRUMER, L. A.

32-2-51/60

AUTHORS: Frumer, L. A., Chistov, N. M.

TITLE: A Device for the Determination of Potentials in Electrolytic Coatings (Pribor dlya opredeleniya napryazheniy v elektroliticheskikh pokrytiyakh)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 2, pp. 244 - 245 (USSR)

ABSTRACT: An investigation method was developed, which is based on a scheme already proposed in publications (reference 1). A replaceable spiral which was wound from a steel, brass or copper strip (thickness 0,25 - 0,5 mm) served as cathode. By this means many shortcomings of the hitherto applied cathode consisting of a metal strip were avoided. Because of the small distance of the spiral windings the electrolytic coating is formed uniformly and only at the outside of the spiral. The potential changes of the cathode which are caused by the depositing of the electrolytic substance during electrolysis are recorded by a pointer. From this value the mean

Card 1/2

32-1-51/60

A Device for the Determination of Potentials in Electrolytic Coatings

potential of the coating is calculated according to a formula. If an increase in measurement accuracy is desired, the spiral--constant K may be determined. The error limit of this method of determination is about 10 %. The curves of the dependence of the coating thickness of a chromium coating measured in μ (electrolyte CrO_3 - 300 g/l, H_2SO_4 - 4 g/l) on the mean potential are given. There are 2 figures, and 1 reference, which is Slavic.

AVAILABLE: Library of Congress

1. Cathodes (Electrolytic cell)-Design

Card 2/2

TESLER, Pinkhus Abovich, kand.tekhn.nauk, starshiy nauchnyy sotrudnik; FRUMES, Zakhar Yakovlevich, inzh.; KOTS, Isaak Davidovich, inzh.; GODYNA, A.K., inzh., red.

[Built-up roof with slabs made of cellular concrete] Sovmeshchennaia krysha s paneliami iz iacheistogo betona; opyt tresta "Donbassenergostroi." Nauchno-issledovatel'skogo instituta betona i zhelezobetona i Eksperimental'no-konstruktorskogo biuro Akademii stroitel'stva i arkhitektury SSSR. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1961. 16 p. (MIRA 14:11)

1. Nauchno-issledovatel'skiy institut betona i zhelezobetona Akademii stroitel'stva i arkhitektury SSSR (for Tesler). 2. Nachal'nik otdela stroitel'nykh konstruktsiy Eksperimental'no-konstruktorskogo byuro Akademii stroitel'stva i arkhitektury SSSR (for Frumes). 3. Glavnyy inzh. tresta "Donbassenergostroy" (for Kots).
(Roofing, Concrete) (Lightweight concrete)

FRUMIN, A. B.

I
751
.K8

Vneshnyaya torgovlya stran narodnoy demokratii (Foreign trade for the countries of people's democracy, ed. by) M. F. Kovrizhnykh i A. B. Frumin.
Moskva, Vneshtorigzdat, 1955.
319 p. tables.

FRUMIN, G., kand. tekhn. nauk (Kiyev)

"Present and future in our cities" by B. Svetlichnii. Reviewed by G. Frumin. Zhil.-kom. khoz. 13 no.5:30 My '63. (MIRA 16:8)

(City planning) (Svetlichnii, B.)

FRUMIN, G., kandidat tekhnicheskikh nauk.

Textbook on planning settlements ("Planning and building workers' settlements" by M.I.Kurennoi. Reviewed by G.Frumin). Gor.i sel'.stroi. no.4:26 Ap '57. (MLRA 10:5)

(Regional planning)
(M.I.Kurennoi)

FRUMIN, G., kand.tekhn.nauk

Distribution of institutions of cultural facilities and municipal services. Zhil.-kom. khoz. 8 no.9:18-19 '58. (MIRA 11:10)
(Municipal services)

FRUMIN, G.I., kand.tekhn.nauk

New book on city building ("Building Soviet cities; architectural and planning problems. Reviewed by G.I. Frumin) Gor.khoz.Mosk. 32 no.12:43 D '58. (MIRA 11:12)

(City planning)

FRUMIN, G., kand.tekhn.nauk

Some problems in mass housing construction. Zhil.stroi. no.11: 22-24 '59. (MIRA 13:4)
(City planning)

FRUMIN, G., kand. tekhn. nauk

"The distribution of housing construction in cities." Reviewed by G. Frumin. Zhil. stroi. no.2:32 '62. (MIRA 15:1)

(City planning)

FRUMIN, G.I., kand.tekhn.nauk

"Planning and building habitable cities." Izv.ASiA no.3:127-128 '62. (MIRA 15:11)

(City planning)

FRUMIN, G., starshiy nauchnyy sotrudnik

"Microdistricts in the planning and building of cities" by P. I. Dubrovskii. Reviewed by G. Frumin. Zhil.-kom. khoz. 12 no.3:31 Mr '62. (MIRA 15:10)

1. Akademiya stroitel'stva i arkhitektury Ukrainskoy SSR, Kiyev.

(City planning) (Dubrovskii, P. I.)

FRUMIN, G.L., inzh.

Mechanization of operations in stockyards. Mashinostroenie no. 2:14-16 Mr-Ap '64. (MIRA 17:5)

L 11207-65 EWT(m)/EWP(k)/EWP(b)/EWA(d)/EWP(v)/EWP(t) Pf-4 RJW/JD/MM/

ACCESSION NR: AP4045458 S/0125/64/000/009/0036/0041

AUTHOR: Nerodenko, M. M. (Engineer); Frumin, I. I. (Doctor of technical sciences)

TITLE: Mechanized hard facing of cold blanking dies

SOURCE: Avtomaticheskaya svarka, no. 9, 1964, 36-41

TOPIC TAGS: hard facing, mechanized hard facing, hard facing electrode, sintered ribbon electrode, dispersion hardenable alloy electrode, blanking die hard facing, wear resistant blanking die

ABSTRACT: A technique has been developed for production of sintered flat electrodes from powders of age-hardenable alloys for mechanized hard facing of precision blanking carbon steel dies. Of several hard-facing alloys which were developed and tested, an alloy of the K30M18 type, containing 0.03—0.04% C, 0.60—0.80% Mn, 0.2—0.5% Si, 17 to 19% Mo, and 28—32% Co and deposited with the AN-60 flux, was the hardest after aging. Hard facing with the K30M18 flat electrode produced a well-formed, sound, wear-resistant layer on a low-carbon steel plate. A continuous bead, 10—15 mm wide and 2—5 mm high, is readily

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ACCESSION NR: AP4045458

formed in a single pass. The deposited metal has a hardness of 43 to 45 HRC which increases to 68—72 HRC after aging at 600C for 1 hr. This increase in hardness is caused by decomposition of a supersaturated solution, accompanied by the formation of highly dispersed particles of a solid solution of CoMo and Fe_3Mo_2 compounds. After aging, the dimensions of parts hard-faced with K30H18 alloy differed by less than 0.05% from the initial dimensions. In production tests, blanking dies hard-faced with the K30H18 alloy were 15—30 times as wear resistant as dies made of tool steels. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Institut elektrosvarki im. Ye. O. Patona AN UkrSSR (Electric Welding Institute, AN UkrSSR)

SUBMITTED: 15Mar64 ATD PRESS: 3104 ENCL: 00

SUB CODE: MM, IE NO REF SOV: 011 OTHER: 003

Card 2/2

FRUMIN, G.L., inzh.

Shell-mold casting house. Mashinostroenie no.3:41-43 My-Je '64. (MIRA 17:11)

PROCESSES AND PROPERTIES INDEX

9

CA

The corrosion of flanges of water pipes. L. I. Frumin and D. M. Rabkin. *Korrozia i Bor'ba s Nei* 6, No. 5-6, 76-9(1940); *Khim. Referat. Zhur.* 4, No. 7-8, 151(1941). —Corrosion of flange couplings of pipes with various gaskets in a continuous circulation of 1.5% NaCl soln contg. 0.02% H_2O_2 was studied for the purpose of selecting flange gaskets for the manuf. of pipes for the Palace of the Soviets. The depth of corrosion was detd with an accuracy of 0.01 mm. by an app. designed by Dyatlov. In all cases the seams corroded to a greater degree than did the metal of the pipe and flange. Al, Cu, Pb, rubber and klingerite gaskets were tried. Best results were obtained from klingerite gaskets; they corroded very little and did not induce corrosion of the adjacent regions of the metal.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

FRUMIN I. I.

USSR/Welding - Strength
Corrosion

Jun 1947

"Methods of Measuring the Corrosion of Welded Joints," I. I. Frumin, Institute of Arc-Welding of the Academy of Sciences, Ukrainian SSR, 9 pp

"Zavodskaya Laboratoriya" No 6

Discusses the peculiarities of corrosion of welded joints and the difficulties encountered in trying to measure the degree of corrosion. Discusses methods of measurement by permeation. Tests on intercrystallic corrosion. Differential - weight method.

17T54

1ST AND 2ND COPERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH COPERS

Ca

9

Measurement of the corrosion of welded joints. I. I. Frumin. *Zavodskaya Lab.* 13, 693-701(1947).—The depth of penetration of corrosion is detd. by exploration with a profilometer, preferably on plastic replicas. Intercryst. corrosion is observed on specimens under stress. In the differential wt. method, the welded sample is exposed along with an unmolded sample of the same metal and the same size. By this method, copper steels welded with low-C steel proved to be less corrosion-resistant at the seam than in the mass. The contrary was found in welded Mn steels.

N. Thon

COMMON ELEMENTS

OTHER MATERIALS INDEX

COMMON VARIABLES INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

FRUMIN, I. I.

Frumin, I. I. "Automatic welding of SKhL2 steel ", Trudy Vsesoyuz. konf-tsii po avtomat. svarke pod flyusom, 3-6 October 1947, Kiev, 1948, p. 116-24.

SO: U-3261, 10 April 53, (Letopis 'Zhurnal 'nykh Statey, No. 11, 1949).

FRUMIN, I. I.

Frumin, I. I. and Rabkin, D. M. "On fluxes for the automatic welding of low-carbon steels", Trudy po avtomat. svarke pod flyusom (In-t elektrosvarki im. Patona), Collection 3, 1948, p. 3-12.

SO: U-3261, 10 April 53, (Letopis 'Zhurnal 'nykh Statey, No. 11, 1949).

USSR/Engineering - Welding Oct 49
Flux

"Formation of Pores in Welded Seams and the Influence of Flux Composition on Tendencies Toward Porosity," I. I. Frumin, Cand Tech Sci, I. V. Kirdo, Engr, V. V. Podgaetskiy, Engr, Inst of Elec Welding imeni Acad Ye. O. Paton, Acad Sci Ukrainian SSR, 11 pp

PA 152T26 "Avtogen Delo" No 10

Discusses determination of quantity and composition of gases evolved during welding under flux, for dense and porous seams, influence of impurities in the metal and viscosity of molten flux on pore formation, effect of supplementary introduction of gas

[redacted] 152T26

USSR/Engineering - Welding (Contd) Oct 49

into the arc cavity, data of spectrum investigation of arc in presence of flux vapor, mechanism of pore formation, behavior of fluorine compounds during welding, and similar data. States conclusions. Includes 14 tables and 10 diagrams.

[redacted] 152T26

FRUMIN, I. I.

FRUMIN, I. I.

Frumin, I. I. - "The production of pumiceous flux for automatic welding," Trudy po avtomat. svarke pod flyusom (In-t elektrosvarki im Patona), Symposium 4, 1949, p. 39-55, - Bibliog: 8 items

SO: U-4355, 14 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 15, 1949)

FRUMIN, I. I.

Frumin, I. I. "On air gramilation of flux for automatic welding", Trudy po avtomat. svarke pod flyusom (In-t elektrosvarki im. Patona), Collection 5, 1949, p. 48-52.

SO: U-4392, 19 August 53, (Letopis 'Zhurnal 'nykh Statey, No 21, 1949).

FRUMIN. I. I., KIRDO, I. V., PODGAYETSKIY, V. V.

Inst. Electric Welding im.Ye. O. Patron, Ukrainian Acad. Sci., (-c1949-)

Cand. Technical Sci.

"The formation of pores in welded seams and the influence of flux composition on tendencies toward porosity," Avtogen. Delo, No. 10, 1949.

FRUMIN, I. I.

AID P - 857

Subject : USSR/Engineering

Card 1/1 Pub. 11 - 3/13

Authors : Frumin, I. I., Pokhodnya, I. K. and Kirdo, I. V.

Title : Bimetallic rotary cutter for drilling bits

Periodical : Avtom. svar., #4, 29-45, Jl-Ag 1954

Abstract : A new method of construction of cutters for drilling bits is described with an outline of successive processes from the initial preparation of the bit, welding of bimetallic armoring powders, tempering and fine shapeing. The author presents composition metallographic analysis, results of mechanical laboratory tests, and wearing characteristics during actual service. Four diagrams, 6 microphotographs, 10 photographs, 4 tables and 19 references, 15 Russian (1938-1952).

Institutions: All-Union Scientific Research Inst. for Oil Well Drilling; Institute of Electric Welding im E. O. Paton

Submitted : My 20, 1954

FRUMIN, I.I.

Increasing the durability of rollers by weld deposition. Avtom. svar. 7 no.3:3-25 My-Je '54. (MLRA 7:7)

1. Institut elektrosvarki im. Ye.O.Patona Akademii nauk USSR.
(Rolls)Iron mills)) (Welding)

FRUMIN, I.I.

BENUA, F.F., kandidat tekhnicheskikh nauk; VOL'PERT, G.D., inzhener.; YEMEL'YANOV, N.P., kandidat tekhnicheskikh nauk; KLEKOVKIN, G.P. inzhener; KUZMAK, Ye.M., doktor tekhnicheskikh nauk, professor; NILOVSKIY, I.A., laureat Stalinskoy premii;PANOV, B.N., inzhener; POKHODNYA, I.K., inzhener; FRUMIN, I.I., kandidat tekhnicheskikh nauk; FRUMIN, S.R., inzhener; ZVEGINTSEVA, K.V., inzhener, redaktor; GOLOVIN, S.Ya., inzhener, redaktor; MATVEYEVA, L.S., redaktor; SOKOLOVA, T.F., tekhnicheskiy redaktor.

[Automatic built-up welding with wear-resistant alloys] Avtomaticheskaia neplavka iznosoustoichivymi splavami. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1955. 244 p.(MLRA 8:11)
(Electric welding)

FRUMIN, I.I.; POKHODNYA, I.K.

Investigating the mean temperature of the submerged melt. Avtom. svar.8 no.4:13-30 Jl-Ag'55. (MLRA 8:11)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki imeni Ye.O.Patona Akademii nauk USSR
(Electric welding)

POKHODNYA, I.K.; FRUMIN, I.I.

Flux temperature in the submerged arc process. Avtom. svar. 8 no.5:14-24 S-O '55. (MLRA 9:1)

1.Ordena Trudovogo krasnogo znameni institut elektrosvarki imeni Ye.O.Patona AN USSR.

(Electric welding) (Thermocouples)

FRUMIN, I.I.

Increasing the strength of rolling-mill rolls. Visnyk AN URSR 26 no.10:55-59 O '55. (MLRA 9:1)
(Rolling mills)

FRUMIN, Isidor Il'ich; PETRICHENKO, Valentin Kuz'mich; PODGAYETSKIY, V.V., otvetstvennyy redaktor; ANDREYEV, S.P., tekhnicheskiy redaktor

[Automatic welding in hard facing steel rolled girders; a practical manual] Avtomaticheskaia naplavka stal'nykh prokatnykh valkov; prakticheskoe rukovodstvo. Khar'kov. Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 114 p. (MLRA 9:10)
(Welding) (Girders)

SOV/137-57-11-21684

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 11, p 148 (USSR)

AUTHORS: Frumin, I.I., Pokhodnya, I.K.

TITLE: Automatic Hardfacing of Certain High-alloyed Steels (Avtomaticheskaya naplavka nekotorykh vysokolegirovannykh staley)

PERIODICAL: V sb.: Probl. dugovoy i kontakt. elektrosvarki. Kiyev-Moscow, Mashgiz, 1956, pp 162-175

ABSTRACT: A description of methods for prevention of the formation of pores, cracks, and slag inclusions in the process of hardfacing under flux of high-alloy steels by means of powdered welding rods (PWR); the technology of depositing a layer of die-type steel of the 3Kh2V8 and Kh12VF type by means of welding is described, together with the development of necessary fluxes. Gaseous H, N, and CO are the primary cause of porosity. The H must be chemically combined into compounds that are insoluble in molten metal (OH and HF). SiF_4 is the main source of F. If the hardfacing operations are performed under low-silicon flux (LSF), the PWR are augmented with Na_2SiF_6. In order to prevent penetration of N into the molten metal, it is proposed

Card 1/3

SOV/137-57-11-21684

Automatic Hardfacing of Certain High-alloyed Steels

that a gas medium be used in addition to the protective slag medium. Reducing the molten metal with the aid of Si, Ti, Mn, Cr, etc., precludes the formation of pores produced by the CO gas. Three types of cracks are described (hot and cold cracks, and cracks in the vicinity of the weld), reasons for their appearance are given, and methods for their prevention are outlined: Preliminary heating into a range above the martensite point of the parent metal; application of the LSF; leveling off the temperature at the end of hardfacing operations followed by uniform cooling of the components. Utilizing the steel Kh12 as an example, it is demonstrated that hot cracking may be avoided if the amount of liquid eutectic is increased (the C content is raised from 1.0-1.5% to 1.8-2.1%). The process of segregation of slag and metal in the bath is described; it is noted that Cr_2O_2 and V_2O_3 intensify the similarity between the slag lattice and the lattice of Fe^{δ}, which results in an increased number of slag inclusions. Essential characteristics required in fluxes are listed, and chemical composition, technological properties, and fields of application of LSF's (AN-10, AN-22, AN-20, AN-30) are described. The technology of hardfacing an area with a layer of die-type steel Kh12VF employed in cold-stamping (2.0% C, 12.5% Cr, 1.0% W, 1.0% Mn) involves the following procedures and materials: Electrode rods employed, PP-Kh12VF (PP= powdered welding rods); preliminary heating of blanks

Card 2/3

SOV/137-57-11-21684

Automatic Hardfacing of Certain High-alloyed Steels

300 mm long and 100 mm in diameter to a temperature of 400-450°C in an induction furnace operating on a current of industrial frequency; introduction of AN-30 flux; final cooling after hardfacing in the furnace. It is recommended that annealing operations follow an isothermal cycle. The technology of hardfacing, by means of depositing a layer of die-type steel K2V8 (0.35% C, 2.5% Cr, 8.5% W, and 0.3% V), employed for drop forging, on blanks with a diameter of 300 mm consists of the following procedures: Preliminary heating to 350-370°; hardfacing of blanks in 4-5 passes utilizing direct current with a reversed polarity (220-250 a, 25-28 v), the rate of welding being 35-45 m/hr; flux AN-20 is employed together with powdered welding rods 3.5 mm in diameter; after completion of the hardfacing operations the finished components are heated to a temperature of 370-400° and are then cooled in a heat-insulated box at a rate of 20°/sec. The authors point out that steels G13, R18, and R9 have been successfully employed for hardfacing of components.

V.B.

Card 3/3

Frumin, I. I.

137-1957-12-24201

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 12, p 186 (USSR)

AUTHOR: Frumin, I. I.

TITLE: Increasing the Wear Resistance of Machine Parts by Means of Surfacing by Automatic Welding. (Povysheniye iznosostoykosti detaley mashin putem avtomaticheskoy naplavki)

PERIODICAL: V sb.: Povysheniye iznosostoykosti i sroka sluzhby mashin. Kiyev-Moscow, Mashgiz, 1956, pp 322-328

ABSTRACT: In the process of increasing the wear resistance of machine parts by building up their surfaces by welding the alloying components may be introduced into the welds by either of two methods: through flux [a drawback of this method is a considerable fluctuation in the chemical composition of the built-up layer of metal (BLM)], and through the welding wire which involves the employment of expensive and hard-to-find wire. An effective solution is the employment of the "powdered" rod (PR) in conjunction with low-silicon fluxes of the AN-20 or AN-30 type containing no manganese. The technological peculiarities of the automatic welding of a BLM of high-alloy steel by means of PR's are described: they involve the employment of low-silicon

Card 1/4

137-1957-12-24201

Increasing the Wear Resistance of Machine Parts (cont.)

flux, which assists the process of branching out of the primary crystals, and favors a uniform distribution of the liquating additives; the absence in the flux of the oxidizing agents MnO and FeO ensures the easy segregation of the slag and does not impair the continuity of the 'surfacing process; flux AN-20 containing about 20 percent SiO_2, is used successfully to prevent the formation of pores, but it has the drawback of fluidity and of contaminating the BLM with Si; flux AN-30, containing 2 - 5 percent of Si, is devoid of the drawbacks of the AN-20 flux, but is rather inefficient in preventing the formation of pores; in order to eliminate the basic cause of pore formation, namely the liberation of H, sodium fenosilicate (Na_2SiF_6). . .
[Transl. Note: the Russian original reads "Na_2SF_6" which is incorrect], is introduced into the core of the PR; at high temperatures the Na_2SiF_6 is decomposed and liberates SiF_4, which then reacts with H to form HF which is not soluble in liquid steel; in order to prevent cracks, the pre-heat temperature must lie between 300-600°; for bodies of rotation 100 mm in diameter or more, it is recommended that induction hysteresis heating by means of industrial -frequency alternating current be used.

Card 2/4

137-1957-12-24201

Increasing the Wear Resistance of Machine Parts (cont.)

The technology of building up surfaces of rolls for hot-rolling mills by welding is described as it is employed at metallurgical plants: the preliminary induction heating to a temperature of 350-400° is followed by welding with PR 3 Kh 2 V 8 which imparts the following chemical composition to the BLM (in percent): C 0.35, Cr 2.5, W 8.5, and V 0.5; the flux used is the AN-20 type. The characteristics of the welding installations are described and a computation of the economic effectiveness of the process is given. A technology for the manufacture of bimetallic cutting cones of drill bits is developed; following a preliminary heating to a temperature of 450-500°, the surface of the case-hardened 12 Kh N 2 or 18 Kh G T steel is covered, by means of welding with Kh 12 V F steel which contains (in percent): C 2.0, Cr 12, W 1.0, and V 0.5; the flux used in this process is of the AN-30 type. After annealing and machining, the tooth surface is reinforced with VK2 [illegible] and then tempered; this is accompanied by simultaneous carburization of the internal surfaces of the cone. Tests conducted in the stand have shown that the durability of cones manufactured in this manner surpasses that of the conventional cones by 6-7 times. Photographs of the PR in operation are shown, as well as photographs of the grooved surface of

Card 3/4

137-1957-12-24201

Increasing the Wear Resistance of Machine Parts (cont.)

a worn out roll , and the sequence of operations in the manufacture of the bi-metal cones.

V. B.

1. Automatic welding-Applications 2. Hard surfacing-Applications

Card 4/4

PERIODICAL ABSTRACTS

Sub.: USSR/Engineering AID 4190 - P

FRUMIN, I. I., D. M. RABKIN, V. V. PODGAYETSKIY, I. K. POKHODNYA, and E. I. LEYNACHUK.
NIZKOKREMNISTYYE FLYUSY DLYA AVTOMATICHESKOY SVARKI I NAPLAVKI (Low Silicic Fluxes in Automatic Welding and Hard Facing). Avtomaticheskaya svarka, no. 1, Ja/F 1956: 1-20.

A discussion of the application of various special fluxes with a low silicic content, like the AN-10, AN-20, AN-22 and AN-30, used in welding of alloyed steel to achieve better results and prevent formation of pores in welded seams. The authors present the chemical composition of built-up metal, formation of built-up metal and bead, structure of built up metals, and tendency for formation of crystallized flows, separation of clinker, etc. Thirteen tables, some macropictures, graph and sketch. Sixteen Russian references, 1946-1955.

FREUMIN, I. I.

7808* Russian Preventing Pores in Submerged Welded Joint Deposition Preduprezhdenie por pri svarke [illegible] Vodke pod flusom. I. I. Freumin. Avtomaticheskaya [illegible] 8 Nov Dec 1958 [illegible]

Experimental data on the formation of pores [illegible] preventing pores

Order of Lenin Red Banner Institute of Electric Welding im V.O. Patona, AN UkSSR

SOV/137-58-7-14748

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 115 (USSR)

AUTHOR: Frumin, I.I.

TITLE: Increasing the Life of Steel Rolling-mill Rolls by Automatic Facing (Povysheniye stoykosti stal'nykh prokatnykh valkov posredstvom avtomaticheskoy naplavki)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii, 1956, Vol 10, pp 176-192

ABSTRACT: An investigation is made of increasing the service lives of rolls (R) by automatic facing (F). The backing of a bimetallic R should be of an inexpensive, strong, and tough metal (C or Cr steel), whereas the working surface should be made of a metal of maximum wear resistance (high-alloy steel). The wear resistance of the working surface of rolling-mill R depends upon their resistance to thermal fatigue and wear at high temperatures. Grade 3Kh2V8 Cr-W steel is the type best suited to the working layer of rolling-mill R. A process has been developed for the F of a layer of 3Kh2V8 steel involving a powder-wire electrode of the appropriate composition in conjunction with AN-20 low-silicon flux. Local heat treatment of faced R

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SOV/137-58-7-14748

Increasing the Life of Steel Rolling-mill Rolls by Automatic Facing

with the aid of induction heating has been developed, making it possible to obtain the desired structure and hardness. An examination is made of the technique of F a wear-resistant layer that affords good forming of the clad metal. This method employs roll-turning and universal roll-facing machines. It is shown that the F of 3Kh2V8 steel on the working surface of the R makes it possible to increase strength 8 to 10-fold over that of forged R of Nr 55 steel, 3.3-4-fold over that of hardened R of 60KhG steel, and 1.7-3--fold over heat-treated 15KhNM steel rolls. This permits a saving of 65-90% of the annual expenditures upon steel R, and a considerable increase in the output of the mills.

V.K.

1. Rolling mills--Performance 2. Rolling mills--Equipment 3. Rolling mills--Maintenance

Card 2/2

FRUMIN, I.I.

Mechanics of crystallization crack formation in welding and hard facing. Avtom. svar. 10 no.1:88-102 Ja-F '57. (MLRA 10:4)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O. Patona AN USSR.
(Electric welding) (Hard facing) (Deformation (Mechanics))

FRUMIN, I.I.

FRUMIN, I.I.

Size of metal droplets carried by the arc. Avtom. svar. 10 no.5: 64-70 S-O '57. (MIRA 10:12)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O. Patona AN USSR.

(Electric welding)

FRUMIN, I.I.

FRUMIN, I.I.

Kinetics of the interaction between metal and slag in welding under flux. Avtom.svar. 10 no.6:3-18 N-D '57. (MIRA 11:1)

1.Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O. Patona AN USSR.
(Electric welding)

FRUMIN, I. I.

[illegible] Candidate of Technical Sciences

[illegible] Third Scientific and Technical Conference in Kiev [illegible] Improvement of the Wear Resistance and Service Life of Machines (Tret'ya Kiyevskaya nauchno-tekhnicheskaya konferentsiya po povysheniyu iznosostoykosti i sroka sluzhby mashin)

[illegible] (Vestnik Mashinostroyeniya, 1958, No 2, pp [illegible])

[illegible] The conference was organized by the Kiev region of the NTO Mashprom (The Scientific and Technical Organization of the Mechanical Engineering Industry) and by the Institute of Mechanics of Building Structures, Ac.Sc. Ukrainian SSR (Institut stroitelnoy mekhaniki AN USSR). 430 delegates representing the major institutions of the Ac.Sc. USSR and of the Ukrainian SSR, the specialised research agencies and the large Soviet plants heard and discussed 90 papers devoted to the study of the mechanism of disintegration of surface layers in machine components and to new methods of improving the wear life of components.

In a paper by Academician S.V. Serensen, entitled [illegible] Related to Wear and Fatigue", a survey of Russian and foreign studies was given with emphasis on fatigue failures caused by wear, both as a result of the mechanical consequences due to

Card 2/8

[illegible] Scientific and Technical Conference [illegible]
ment of the Wear Resistance and Service Life of Machines

[illegible] the formation [illegible]
as a result of a change in the physical and chemical conditions
of contact surfaces.

A.D. Grozin, Corresponding Member of the Ac. Sc. Ukrainian [illegible]
a paper entitled "The Complex Method of Analysis of Components
Working Under the Conditions of Rolling Friction" presented a
method which includes the combined use of electron microscope,
X-ray diffraction and spectroscopic analyses to judge the con-
dition of the surface layers in association with wear tests and
static mechanical tests under tri-axial non-uniform compression
at different temperatures. It is claimed that with the help of
this method, the relation between the contact endurance strength
of steel and the factors defining the condition of the surface
can be established.

In a paper "On Temperature Measuring Methods in the Friction
Process between Solid Bodies", by S.A. Sukhov, Candidate of
Technical Sciences, a method for measuring the temperature
gradients in the immediate vicinity of the friction surfaces
with the help of a natural thermocouple was presented. Both
sliding bodies (pin and ring) are made of the same material, but
the pin end face is covered with a thin layer of another metal.

[illegible] Scientific and Technical Conference [illegible]
[illegible] the Wear Resistance and Service Life of Machines

which constitutes the natural thermocouple of which one [illegible]
is the sliding surface and the other is the bond between the [illegible]
[illegible] and the coating metal.

Great interest was aroused by the paper "The Variation of Wear Resistance of Certain Anti-friction Alloys under Nuclear Radiation" by B.I. Slin'ko. Precipitation-hardening alloys (beryllium copper [illegible] and nickel silicon bronze Bp. KH 1-3) have their strength and wear resistance increased by nuclear radiation. Alloys changing their properties mainly as a result of phase transformations and having a higher re-crystallisation temperature change their properties insignificantly.

In a paper "Foundations of the Cavitation-erosion Failure of Ferrous Alloys", I.N. Bogachev, Doctor of Technical Sciences, generalised the R.I. Mints, Candidate of Technical Sciences, generalised the studies of the effect of the chemical and phase composition of iron carbon alloys on their cavitation erosion resistance. Increasing the carbon content from 0.023 to 1.2% improves the erosion resistance. The effect of alloying is due solely to the metallographic structure obtained. A pronounced improvement in erosion resistance is obtained in spheroidal graphite cast iron

The Third Scientific and Technical Conference [illegible]
Want of the Wear Resistance and Service Life of Machines

[illegible] L.A. Chatynyan in his paper [illegible]
of Nickel Alloys under Dry Friction at Elevated Temperatures
reported the results of his test which showed nickel alloys
have the best wear resistance at high temperatures [illegible]
initial hardness is of little consequence. [illegible]
ition of a new alloy with a high wear resistance at 400 [illegible]
given, whilst high-speed steel and ordinary chromium [illegible]
little wear resistance under dry friction at high temperatures.
V.P. Grechin, Candidate of Technical Sciences, concluded [illegible]
paper "The Heat Resistance of Cast Iron as the Main Factor in
its Wear Resistance under Sliding Friction" that the hardness of
cast iron at high temperatures (up to 850 °C) determines its
wear resistance. Based on numerous studies of various cast irons
recommendations for alloying and for the application of cast
irons under different conditions were given.
It was noted by N.I. Kovalenko, Candidate of Technical Sciences
in his paper "The Wear Resistance of Wire Ropes" that the failure
down of a wire rope is caused by an abrasive medium and its
failure occurs before fatigue sets in. The author recommends

[illegible] Technical Conference [illegible]
[illegible] Wear Resistance and Service Life of Machines

[illegible] pulleys [illegible]
[illegible] increase the wear life of wire ropes by a factor of 2-[illegible]
[illegible] Frumin, Candidate of Technical Sciences, in his paper [illegible] Alloys for Wear-resistant Hard Facing Deposits", stated the theoretical basis and methods of alloying to obtain the desired results and surveyed the fields of application of different methods of deposition on wearing components.
In his paper, "Electric Slag Method of Hard Facing for Wear Resistance", I.K. Pokhodnya, Candidate of Technical Sciences, suggested the electric slag process for hard facing of different components and concluded that this method is appropriate when large quantities of metal have to be deposited or when large numbers of components require treatment.
M.V. Silonenko, Engineer, suggested in his paper "The Electrolytic Diffusion Method of Making Bi-metal Components" a novel method of manufacturing copper base alloys. The alloying proceeds at a temperature much below the fusion temperature of copper. Great economies are achieved in labour cost and in scarce metals. Semi-[illegible] and automatic production procedures can be applied. [illegible]

properties by enrichment with [illegible]
surface. The latter methods mainly improve the anti-seizure
properties, whilst the former improve wear resistance.
Sulphiding can be achieved in solid, liquid and gaseous media.

[illegible]

[illegible] of the Wear Resistance and Service Life of Machines

AUTHOR: Frumin, I.I. 125-1-1/15

TITLE: About the Attainability of Equilibrium Between Slag and Metal in Welding and Fusion (O vozmozhnosti ravnovesiya mezhdu shlakom i metallom pri svarke i naplavke)

PERIODICAL: Avtomaticheskaya Svarka, 1958, # 1, pp 3 - 13 (USSR)

ABSTRACT: Investigations were carried out on metal and slag compositions during welding under flux, saturated with silica. Only in one case is it known that investigations were carried out dealing with equilibrium in open arc welding. The author points to a table containing the results of 6 experiments and the initial composition and analysis results of seam metals and slags; the slag was taken from seams and metallic drops and non reacted flux was cleaned off.

Comparing tables 4 and 5, it appears that in none of the experiments equilibrium could be obtained in temperatures preceding metal hardening.

The author concludes that each welded metal part undergoes the same subsequent processes, i.e. heating, mixing with liquid slag, separation of metal and slag, cooling off and crystallization.

Card 1/ 3 Investigations of open arc welding have shown that in

About the Attainability of Equilibrium Between Slag and Metal in Welding and Fusion

many cases slag and metal compositions correspond to equilibrium at high temperatures. In other cases only a trend towards equilibrium was established. Experimental investigations of metal and slag compositions were carried out as to welding under flux containing more than 50% SiO_2 and more than 90% (SiO_2- MnO - FeO) with a different composition of the welding rod and the primary metal. Computations of the equilibrium of the composition of metals according to formulas submitted by A.D. Kramarov were carried out for acid slag saturated with silica.

Furthermore, it was established that in some cases the slag and metal composition corresponds to the equilibrium in temperatures of about 1,700°C. In the majority of cases, equilibrium was not attained. The decrease of the reaction speed in the cooling off of liquid metals causes the fixing of the compositions corresponding to high temperatures.

Thermodynamic computations allow only an approximate determination of the direction of slag-metal interaction in welding.

125-1-1/15

About the Attainability of Equilibrium Between Slag and Metal in Welding and Fusion

There are 13 Russian, 5 English and 1 German references.

ASSOCIATION: The Institute of Electrowelding imeni Ye.A. Paton (Institut elektrosvarki imeni Ye.O. Patona) of the Ukrainian SSR Academy of Sciences.

SUBMITTED: 29 October, 1957

AVAILABLE: Library of Congress

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FRUMIN, I. I., Doc Tech Sci (diss) -- "The metallurgical principles of an automatic wear-resistant weld seam". Kiev, 1959. 36 pp (Leningrad Polytech Inst im M. I. Kalinin), 200 copies (KL,No 23, 1959, 164)

25(1) PHASE I BOOK EXPLOITATION SOV/3353

Frumin, Isidor Il'ich

Avtomaticheskaya naplavka pod flyusom (Automatic Flux-shielded Hard Facing) Moscow; Mashgiz, 1959. 109 p. 8,500 copies printed. (Series: Biblioteka svarshchika)

Editorial Board: A. Ye. Asnis, A.A. Kazimirov, B.I. Medovar, B.Ye. Paton (Resp. Ed.), and V.V. Podgayetskiy; Ed. of this Vol: V.V. Podgayetskiy, Candidate of Technical Sciences; Ed.: V. V. Mayevskiy; Chief Ed. (Southern Division, Mashgiz): V.K. Serdyuk, Engineer.

PURPOSE: This book is intended for welders.

COVERAGE: Modern methods of flux-shielded hard facing are briefly explained. Techniques of hard-facing articles of various shapes are discussed. Designs of the most widely used hard-facing equipment are described. Typical applications of automatic hard facing are mentioned: restoration of worn tractor and automotive parts, increasing the wear resistance of rolling mill rolls and other metallurgical equipment, etc. There are 11 references, all Soviet.

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Automatic Flux-shielded Hard Facing SOV/3353

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AVAILABLE: Library of Congress (TK4660.F78)

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25(1) PHASE I BOOK EXPLOITATION SOV/3121

Akademiya nauk UKSR, Kiyev, Institut elektrosvarki imeni akademika Ye.O. Patona

Vnedreniye novykh sposobov svarki v promyshlennost', vyp. 2 (Introduction of New Welding Methods in Industry; Collection of Articles, No. 2) Kiyev, Gos. izd-vo tekhn. lit-ry Ukrainskoy SSR, 1959. 194 p. Errata slip inserted. 3,000 copies printed.

Ed.: V. Garkusha; Tech. Ed.: S. Matusevich.

PURPOSE: This book is intended for workers in the welding industry.

COVERAGE: The book contains a discussion of welding techniques and problems by groups of scientists and welders. Much attention is given to problems in the application of new methods of mechanized welding and electro-slag welding. This is the second collection of articles under the same title prepared and published by the Institut elektrosvarki imeni Ye.O. Patona (Institute of Electric Welding imeni Ye.O. Paton). The preface is written by B.Ye. Paton, Academician of the Ukrainian Academy of Sciences and Winner of the Lenin Prize. There are no references.

28(1) PHASE I BOOK EXPLOITATION SOV/2156

Soveshchaniye po kompleksnoy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov. 2nd, 1956.

Avtomatizatsiya mashinostroitel'nykh protsessov; /trudy soveshchaniya/, tom. 1: Goryachaya obrabotka metallov (Automation of Machine-Building Processes; Proceedings of the Conference on Over-All Mechanization and Automation of Technological Process, Vol 1: Hot Metal-Forming) Moscow, 1959. 394 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: V.I. Dikushin, Academician; Compiler: V.M. Raskatov; Ed. of Publishing House: V.A. Kotov; Tech. Ed.: I.P. Kuz'min.

PURPOSE: The book is intended for mechanical engineers and metallurgists.

COVERAGE: The transactions of the Second Conference on the Over-All Mechanization and Automation of Industrial Processes, September 25-29, 1956, have been published in three volumes. This book, Vol. I, contains articles under the general title, Hot Working of Metals. The investigations described in the book were conducted by the Sections for Automation and Hot Working of Metals, under the direction of the following scientists: casting - P.N. Aksenov, D.P. Ivanov and G.M. Orlov; forming - A.I. Tselikov, A.D. Tomlenov and V.T. Meshcherin; welding - G.A. Nikolayev, B.I. Prolov and G.A. Maslov. There are 183 references: 142 Soviet, 34 English, 6 German, and 1 French.

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FRUMIN, I.I.

18(5,7), 25(5) SOV/125-59-5-13/16

AUTHOR: None Given

TITLE: Scientific-Technical Conference on Questions of Welding Engineering

PERIODICAL: Avtomaticheskaya svarka, 1959, Vol 12, Nr 5 (74) pp 95-96 (USSR)

ABSTRACT: The scientific-technical conference on question of welding engineering convened in Khar'kov from March 11- 13, 1959. The following organizations convened in the conference: The Scientific-Technical State Committee of the Council of Ministers of the UkrSSR, the Khar'kov Sovnarkhoz, the Institute of Electric Welding imeni Ye.O. Patona of the Academy of Sciences of the UkrSSR, the Kiyev and Khar'kov oblast administrative NTO of the machine industry. After the introduction of the Chairman of GNTK UkrSSR, G.P. Kostenko, the conference heard the report of Academician AS UkrSSR, B.Ye. Paton "On the Reintroduction and production of Welding Engineering". After that, the following reports were heard at the conference: Member of Gos Plan UkrSSR and

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D.I. Polyakov on establishing materials engineering bases in the republic for the development of welding. Vice Chairman of Sovnarkhoz V.N. Yakovlev on the introduction of welding engineering in the enterprises of the Dnepropetrovsk economic administrative area. Chief of Technical Administration of the Khar'kov Sovnarkhoz I.I. Kuzubov on the introduction of progressive welding engineering in the enterprises of the Sovnarkhoz. Comrade Ratnikov on successes of the Zaporozh'ye Metal Construction Factory in introducing welding engineering. Candidate of Technical Sciences I.I. Frumin (Institute of Electric Welding imeni Ye. O. Paton) on new works on automatic welding. Chief of Welding Department of the Novo-Kramatorskiy Machine Factory V.K. Yeremenko on the use of "electric Slag" welding in heavy machine building. Candidate of Technical Sciences Yu. A. Yuzvenko spoke on ceramic flux for welding. Chief of Welding Department of Khar'kov Turbine Factory, S.I. German on the use of radioelectric welding in carbon dioxide. Candi-

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date of Technical Sciences P.I. Sevbo on new equipment for welding, worked out by the Institute of Electric Welding imeni Ye.O. Paton. Candidate of Technical Sciences V.K. Lebedev (Institute of Electric Welding imeni Ye.O. Paton) on new works on point-welding. Engineer L.V. Zarchik on new welding equipment, worked out by VNIIESO, Vice Director of the Institute of VNII Avtogen, Candidate of Technical Sciences I.A. Antonov on recent achievements in the gas flame treatment of metals. Candidate of Technical Sciences N.P. Kazakov (Chair of Technology of Metals at Moscow Institute of the Meat and Milk Production) on a new method of vacuum diffusion welding.

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PHASE I BOOK EXPLOITATION SOV/5078

Akademiya nauk URSR, Kiyev. Instytut elektrozvaryuvannya

Vnedreniye novykh sposobov svarki v promyshlennost'; sbornik statey. vyp. 3. (Introduction of New Welding Methods in Industry; Collection of Articles. v. 3) Kiyev, Gos. izd-vo tekhn. lit-ry UkrSSR, 1960. 207 p. 5,000 copies printed.

Sponsoring Agency: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki imeni akademika Ye. O. Patona Akademii nauk Ukrainskoy SSR.

Ed.: M. Pisarenko; Tech. Ed.: S. Matusevich.

PURPOSE: This collection of articles is intended for personnel in the welding industry.

COVERAGE: The articles deal with the combined experiences of the Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton) and several industrial enterprises in solving scientific and engineering problems in welding technology. Problems in the application of new methods of mechanized welding and electroslag welding in industry are discussed. This is the third collection of articles published under the same title. The Foreword was written by B. Ye. Paton, Academician of the Academy of Sciences Ukrainian SSR and Lenin prize winner. There are no references.

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PRUMIN, I. I.

(15)

S/137/61/000/011/056/123
A060/A101

AUTHOR: Frumin, I.I.

TITLE: Automatic wear-resistant build-up

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 11, 1961, 57, abstract 11Ye367 (V sb. "1-ya Sibirsk. konferentsiya po svarke, 1959", Barnaul, 1959(1960), 53-95)

TEXT: The author considers automatic electric arc building up by the submerged process, building up in a stream of protective gas, electric pulse building up (vibro-arc, electric-spark), electric-slag building up, building up by high-frequency current, alloying of the built up metal. Measures for preventing pores and cracks in course of building up, the structure and wear-resistance of the built-up metal are described. Examples are cited of the building up techniques for certain articles: forks, bands, railway wheels, bearing rollers and tension wheels, tractor treads, connecting rods for tractor engines, rolling rolls, parts for the charging apparatus of blast furnaces, beaters of hammer crushers. Electric slag building up of cores for ingot

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Automatic wear resistant.....

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grippers, and the automatic building up of bronze layers is considered. There are 15 references.

V. Tarisova

[Abstracter's note: Complete translation]

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PHASE I BOOK EXPLOITATION SOV/4343

Soveshchaniye po teorii liteynykh protsessov, 3d

Usadochnyye protsessy v metallakh; trudy soveshchaniya (Shrinkage Processes in Metals, Transactions of the Third Conference on the Theory of Casting Processes) Moscow, AN SSSR, 1960. 281 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: B.B. Gulyayev, Doctor of Technical Sciences, Professor; Ed. of Publishing House: V.S. Rzhaznikov; Tech. Ed.: T.V. Polyakova.

PURPOSE: This collection of articles is intended for scientific workers, engineers, technicians of scientific research institutes and industrial plants, and for faculty members of schools of higher education.

COVERAGE: The collection contains technical papers presented at the Third Conference on the Theory of Casting Processes, organized by Liteynaya sektsiya Komissii po tekhnologii mashinostroyeniya Instituta mashinovedeniya AN SSSR (Casting Section of the Commission for Machine-Building Technology of the Institute of Science of Machines, Academy of Sciences USSR) and by Institut metallurgii imeni Baykova AN SSSR (Institute of Metallurgy imeni A.A. Baykov, Academy of Sciences USSR). The most serious defects in castings, ingots, and welds as a result of metal shrinkage are reviewed. Factors contributing to the formation of shrinkage cavities, porosity, cracks, fissures, distortion, and internal stresses are analyzed along with measures taken to prevent and remedy them. The hydrodynamics of molten metals and the process of solidification of metals are discussed. Also presented are resolutions adopted at the Conference with regard to the problem of shrinkage in metals. No personalities are mentioned. Most papers are accompanied by bibliographic references, the majority of which are Soviet.

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AVAILABLE: Library of Congress (TS230.S7)

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FRUMKIN, I.I.

FRUMIN, Isidor Il'ich; LEYNACHUK, Yevgeniy Ivanovich; YUZVENKO, Yuriy Arsen'yevich; NERODENKO, Mikhail Minovich; BOBROVA, T.L., red.; KOZLOVSKAYA, M.D., tekhn. red.; PERSON, M.N., tekhn. red.

[Principles of the technology of mechanized hard facing] Osnovy tekhnologii mekhanizirovannoi naplavki. Moskva, Vses.uchebno-pedagog.izd-vo Proftekhizdat, 1961. 303 p. (MIRA 15:1)
(Hard facing)

FRUMIN, I. I.

PHASE I BOOK EXPLOITATION SOV/5975

International Institute of Welding

XII kongress Mezhdunarodnogo instituta svarki, 29 iyunya - 5 iyulya 1959 v g. Opatii (Twelfth Annual Assembly of the International Institute of Welding, Opatija, June 29 - July 5, 1959) Moscow, Mashgiz, 1961. 350 p. 3000 copies printed.

Sponsoring Agency: Natsional'nyy komitet SSSR po svarke.

Ed. (Title page): G. A. Maslov, Docent; Translated from English, French, and Serbo-Croatian by N. S. Aborenkova, K. N. Belyayev, E. P. Bogacheva, L. A. Borisova, K. V. Zvegintseva, V. S. Minavichev, and M. M. Shelechnik; Managing Ed. for Literature on the Hot-Working of Metals: S. Ya. Golovin, Engineer.

PURPOSE: This collection of articles is intended for welding specialists and the technical personnel of various production and repair shops.

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COVERAGE: The collection contains abridged reports presented and discussed at the Twelfth Annual Assembly of the International Institute of Welding. Reports deal with problems of welding and related processes used in repair work, repair techniques, and the problems arising in connection with the nature of the base and filler materials. Examples of repairing various parts are given, and the organization of repair operations in workshops and under field conditions is discussed. Economic aspects of welding and related processes as used in repair work are analyzed. No personalities are mentioned. There are no references.

TABLE OF CONTENTS: [Only Soviet and Soviet-bloc reports are given here]

SOV/5975

Twelfth Annual Assembly (Cont.)

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PHASE I BOOK EXPLOITATION SOV/5217

Frumin, Isidor Il'ich

Avtomaticheskaya elektrodugovaya naplavka (Automatic Electric-Arc Surfacing) Khar'kov, Metallurgizdat, 1961. 421 p. Errata slip inserted. 5,000 copies printed.

Resp. Ed.: V.K. Petrichenko; Ed. of Publishing House: S.S. Liberman; Tech. Ed.: S.P. Andreyev.

PURPOSE: This book is intended for engineers and technicians concerned with problems of metal surfacing. It may also be useful to scientific research workers and students at schools of higher education.

COVERAGE: Theoretical and practical bases of the automatic surfacing of metals are reviewed along with the results of experience gained in its industrial application. Also discussed are general metallurgical problems of welding and surfacing, the possibility of obtaining a given chemical composition of the deposited metal, conditions of the formation of gas pockets and hot cracks, and methods for the prevention of these formations. Materials used

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